REMARKS

Claims 1-22, 28-34 and 36-57 are pending in this application. Claims 5, 7-11, 18, 28-33, 37, 39-42, 46, and 55-57 are amended. Applicant respectfully notes that although the examiner states claims 1-57 are rejected, applicant cancelled claims 23-27 and 35 in its amendment filed June 26, 2006. Therefore, claims 1-22, 28-34 and 36-57 are rejected. Reconsideration of the claims is requested in light of the following remarks.

Official Notice

Regarding claims 1, 11, and 48, the Examiner took Official Notice that "the disclosed reverse biasing of one of the emitting LEDs to a detected LED acts ad the claimed switch which is coupled to the driving circuit (401) and the sensing circuit (101-103)." The Examiner is reminded that "Any rejection based on assertions that a fact is well-known or is common knowledge in the art without documentary evidence to support the examiner's conclusion should be judiciously applied. Furthermore, as noted by the court in Ahlert, any facts so noticed should be of notorious character and serve only to "fill in the gaps" in an insubstantial manner." MPEP 2144.03 E.

Although the Applicant agrees that some diodes can be reversed-biased to function as photodetectors, the fact that a diode can be reverse biased does not necessarily disclose or suggest switching circuitry to switch an LED between a sense mode to an emit mode.

Moreover, the Examiner acknowledges that there is no specific disclosure of using a switch to switch some LEDs from a sense mode to an emit mode, but apparently argues that the capability to reverse bias an LED inherently included such a feature. However, in relying upon a theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. MPEP 2212(IV); Ex parte Levy, 17 USPQ2d 1461, 1464 (BPAI 1990). The Examiner has provided no reasoning as to why the possibility of reverse biasing an LED discloses a switch to switch an LED from an emit mode to a sense mode.

In addition, regarding claim 45, the Examiner took Official Notice that "the usage of a multiplexer as a splitter of a signal is well known in the art."

Accordingly, the Applicant traverses the Official Notices and demands that the Examiner produce authority for the statements to conform with requirements established under the MPEP and in common law.

Claim Rejections – 35 USC § 103

Gu is disqualified as a prior art reference

Claims 15-16 are rejected as being unpatentable over Stam et al. in view of Cok et al. and further in view of U.S. Patent Application Publication No. 2003/0052904 Gu ("Gu"). Claim 36 is rejected as being unpatentable over Stam et al. in view of Mueller and further in view of Gu.

Gu appears to be used in a rejection under 35 USC 103(a) as qualifying as 35 USC 102(e) reference. As described above, Gu and the present application were commonly assigned to Intel Corporation. As a result, under 35 USC 103(c) Gu is disqualified from being used in a rejection under 35 USC 103(a) against claims in the present application.

Accordingly, the Applicant requests that the Examiner withdraw the rejection of claims 15, 16, and 36.

No suggestion to switch LEDs from a sense mode to an emit mode

Claims 1-14 and 40-49 are rejected as being unpatentable over U.S. Patent Application Publication 2002/0047624 Stam et al. ("Stam"), in view of U.S. Patent No. 6,320,325 Cok et al. ("Cok").

Claim 1 includes a switch coupled with the driving circuit, sensing circuit and some of the LEDs, to switch some of the LEDs from the sense mode to the emit mode. Claims 46 and 48 include a similar element. The Examiner indicated that Stan does not have a specific disclosure of a switch to switch some LEDs from a sense mode to an emit mode.

In both Stam and Cok, a dedicated detector is described for detecting light. Neither reference describes an LED that can be switched from a sense mode into an emit mode. Stam only mentions that one of LED 101, 102, or 103 can be reverse biased as a detector 106. Stam, ¶36.

In fact, modifying Stam to switch back and forth makes Stam inoperable. One skilled in the art would not add switching circuitry to Stam because it would introduce error into the operation of Stam. In Stam, the detector 106 measures the relative output of the LEDs 110. ¶31.

Brightness measurements of each of the LED sets are taken. ¶45. The LED sets are LED of the same color. ¶49. Once brightness measurements are acquired, a duty cycle for a desired hue is determined. ¶46.

Using red LEDs as an example, in Stam, the set of red LEDs would be turned on to determine their collective brightness. If, as the Examiner asserts, one of the red LEDs would be reverse biased as a detector, it would not be turned on, and not contribute to the collective brightness of the red LEDs. A duty cycle for red LEDs is determined from that collective brightness.

However, assuming the detector red LED is switched so that it emits like the other red LEDs, the collective brightness would be greater than when the duty cycle was established. The duty cycle was based on the brightness measured when excluding the detector red LEDs. Once it is turned on, the brightness is no longer calibrated. Thus, the calibration preformed by the detection is climinated. As a result, there is no suggestion for a switching circuit in Stam.

In Cok, the representative pixel 20 does not sense light incident on it. Incident light is sensed by the collocated photodiode 21. As a result, there is no need to reverse bias the photodiode 20.

Accordingly, claims 1, 46, 48, and dependent claims 2-14, 40-45, 47, and 49 are allowable over the combination of Stam and Cok.

<u>No suggestion to adjust a brightness of an LED in response to light sensed by the LED</u>

Claim 1 includes a feedback controller coupled with the sensing and driving circuits, the feedback controller to adjust the brightness of an LED in response to the amount of light sensed by that LED.

In Stam, brightness of an LED is changed in response to a brightness sensed in a separate detector 106. Even if an LED is used as a detector, light sensed by that LED detector adjusts other LEDs, not the detector LED. As described above, the device of Stam becomes uncalibrated if the LED detector is turned on, thus it would not be turned on in response to the light it detected. As a result, there is no suggestion in Stam to adjust a brightness of an LED used as a detector in response to the brightness sensed by that LED when used as a detector.

The Examiner indicated that Cok teaches a feedback controller that adjusted the brightness of an LED in response to the amount sensed by the LED. The cited section of Cok is discussing the representative pixel of Cok.

First, there is no suggestion in Cok of having the representative pixel 20 be an LED for displaying an image in a display panel. The Examiner is reminded that, as recited in claim 1, the LEDs form a display panel for displaying a digital image. The representative pixel is only described for measurement or calibration purposes, not for display purposes.

Second, even if the representative pixel in Cok is part of a digital image display, the representative pixel 20 or LED of Cok does not perform the sensing. In Cok, it is the photodiode 21 that performs the sensing, not the representative pixel 20 itself. Thus, there is no suggestion in Cok of an LED that is adjusted in response to light sensed by that LED.

Accordingly, claim 1, and dependent claims 2-14, and 40-45 are allowable over the combination of Stam and Cok.

<u>No suggestion to sense light received by each LED</u>

Claim 5 recites that the sensing circuit is configurable to sense an amount of light energy received by each of the plurality of LEDs. Thus, in claim 5, the sensing circuit is capable of sensing every one of the LEDs. Even if there is a suggestion in Stam of having one or two LEDs function as detectors, there is no suggestion to have all of the LEDs of Stam function as detectors. Furthermore, Cok suggests against having a sensing circuit for all of the LEDs. Cok suggests that there may be multiple representative pixels, however, there is no need for a representative pixel if all of the pixels of the display can be sensed. Cok, col. 2, ll. 58-60. Thus, there is no suggestion in either Stam or Cok of a sensing circuit that is capable of sensing every one of the LEDs.

Accordingly, claim 5 is allowable over the combination of Stam and Cok.

<u>No suggestion for switching circuitry</u>

Claim 8 includes a first switch coupled to the first terminal of the first LED, the reverse biasing circuit, and a power supply; and a second switch coupled to the second terminal of the first LED, the sensing circuit, and the forward driving circuit. In addition, when the first LED is in the sense mode, a first path is formed between the reverse biasing circuit and the sensing

circuit through the first switch, the first LED, and the second switch; and when the first LED is in the emit mode, a second path is formed between the driving circuit and a power supply through the first switch, the first LED, and the second switch.

Thus, in claim 8, if an LED is in the sense mode, a first path is formed through the diode. If the LED is in the emit mode, a second, different path is formed through the same diode. Although Stam suggests that an LED can be forward biased or an LED can be reverse biased, no circuitry that switches between those states is described. Thus, even if reverse biasing circuitry was disclosed, there is still no switching circuitry.

Accordingly, claim 8 is allowable over the combination of Stam and Cok.

<u>No suggestion to drive and sense LEDs as groups</u>

Claim 9 recites that the LEDs are grouped into a plurality of groups. For each group of LEDs, the driving circuit is configured to drive the LEDs of the group when the group is in the emit mode, the sensing circuit is configured to sense an amount of light sensed by at least one of the LEDs of the group when the group is in the sense mode, and the feedback controller is configured to adjust a drive level for each LED of the group in response to the amount of light sensed by the at least one of the LEDs of the group.

Thus, each LED of a group is commonly in a sense mode or an emit mode. In a sense mode, an amount of light is sensed by at least one LED of the group. The feedback controller uses that amount of light to adjust the drive level for each LED of the group.

Stam does describe groups of LEDs. In particular, each group is a unique color. Stam, ¶25. Even following the Examiner's assumption that Stam suggests that an LED can be switched back and forth between an emit mode and a sense mode, neither Stam nor Cok suggest switching all LEDs of the group into a sense mode, then adjusting the drive level through a feedback controller in response to an amount of light sensed by at least one of those LEDs of the group. Although the Applicant does not agree that Stam suggests switching an LED between an emit mode and a sense mode, at best, Stam suggests only switching one LED of a color group into a sense mode, not the entire group.

Accordingly, claim 9 and dependent claim 10 are allowable over the combination of Stam and Cok.

Stam and Cok do not suggest a gamma uniformity calibration circuit

Claim 49 includes a gamma uniformity calibration circuit to adjust the output of the LED over a range of output intensities. The Examiner cited Stam, ¶52-54, for the gamma uniformity calibration circuit. The cited paragraphs describe calibration of the detector 106 in ¶52, measuring initial intensity and peak wavelengths in ¶53, and sensing ambient light ¶54.

In contrast, a gamma uniformity calibration has multiple calibration points over the range of output of an LED. Application, p. 17, ll. 4-6. Measuring initial intensity and sensing ambient light only gives calibration points for an on state and an off state. Such points are at ends of the range of the LED. This is no different from a simple maximum intensity calibration. At least one additional point is needed within the range of the LED to create a gamma uniformity calibration. Such additional points are not suggested by the combination of Stam and Cok.

Accordingly, claim 49 is allowable over the combination of Stam and Cok.

The combination of Stam, Cok, and Ogawa does not suggest a sensing circuit to determine a position on the display panel at which an external light source is pointing

Claims 17-19 and 41 are rejected as being unpatentable over Stam et al. in view of Cok et al. and further in view of U.S. Patent No. 5,572,251 Ogawa ("Ogawa").

Claim 17 includes a position circuit coupled to the sensing circuit and structured to determine a position on the display panel at which an external light source is pointing. From parent claim 1, the display panel includes the LEDs emitting light to create a digital image. Thus, in claim 17, the position circuit is structured to determine a position on the display panel including the LEDs creating the digital image at which the external light source is pointing.

In contrast, in Ogawa, the display unit 13 projects an image on the screen 11. Ogawa, col. 3, ll. 16-20. The laser pointer 15 is pointed at the screen 11, not the display unit 13. Ogawa, col. 3, ll. 45-54. Thus, in Ogawa, the laser pointer 15 is not pointed at the display unit 13.

Furthermore, even if the laser pointer 15 or some other light source is interpreted as pointing at the display unit 13 in Ogawa, the position on the display 13 at which the laser pointer 15 is pointing is not detected by the optical position detecting unit 12. The optical position detecting unit 12 "detects the position of the light point 14." Ogawa, col. 3, ll. 23-25. The light

point 14 is on the screen 11. Ogawa, col. 3, ll. 14-15. Thus, the position that is detected by the optical position detecting unit 12 is the position on the screen 11, not the display unit 13.

Claim 18 recites that the position circuit is configured to compare amounts of light sensed by one or more LEDs in the display panel sensed during the sense mode to determine the position on the display panel at which the external light source is pointing when the external light source is pointing at at least one LED of the display panel. Thus, the position on the display panel is determined from light from the external light source that is sensed by at least one LED in the sense mode. These LEDs are in the display panel.

In contrast, in Ogawa, the emitting elements of the display unit 13 are not described as sensing the laser pointer 15. Furthermore, there is no suggestion that detecting elements of the optical position detecting unit 12 is the display unit 13.

Accordingly, claims 17 and 41, and dependent claims 18-19 are allowable over the combination of Stam, Cok, and Ogawa.

<u>No suggestion for a position locator comparing data sensed by diodes in a sensing mode.</u>

Claim 46 includes a position locator structured to determine a position on the diodes at which an external pointing device is pointing in response to the compared data. The Examiner indicated that there is no specific disclosure of a position locator, yet cited a processor for comparing sensed data. As amended, claim 46 includes a position locator to determine a position in response to the compared data. There is no suggestion in Stam or Cok to determine such a position in response to such compared data.

Accordingly, claim 46 and dependent claim 47 are allowable over the combination of Stam and Cok.

<u>No suggestion to drive a diode based on light sensed by that diode in Stam and Mueller</u>

Claims 28, 29, and 32-34 and 55-57 are rejected as being unpatentable over Stam et al. in view of U.S. Patent No. 6,016,038 Mueller et al. ("Mueller").

Claim 28 includes for at least one diode, sensing the light energy incident on the diode in the sense mode; adjusting an associated drive level in response to the sensed light energy

incident on the diode; and driving the diode in response to an associated drive level in the emit mode. The emit mode and the sense mode for the diode are mutually exclusive.

As described above, Stam and Cok do not describe such switching or driving of a diode in response to a level sensed by that diode. The replacement of Cok with Mueller or the addition of Mueller to the combination of Stam and Cok does not cure the deficiencies of Stam or Stam and Cok. In particular, Mueller focuses on driving LEDs, not sensing light incident on the LEDs. Mueller, Abstract.

Accordingly, claim 28 and dependent claims 29, 32-34, and 55-57 are allowable over the combination of Stam and Mueller.

No suggestion of display cycles

Claims 30 and 31 are rejected as being unpatentable over Stam et al. in view of Mueller and further in view of U.S. Patent No. 5,073,446 Scozzafava et al. ("Scozzafava").

Claim 30 includes a first portion of a display cycle and a second portion of a display cycle where the sensing occurs during the second portion of the display cycle. Although Scozzafava does discloses that a EL device is reverse biased when an AC power source is used, there is no suggestion to sense light energy incident on a diode. Thus, the addition of Scozzafava does not cure the deficiencies of Stam and Mueller.

Claim 31 recites that 31 each diode is both driven in the first portion of the display cycle and senses light energy in the second portion of the display cycle. If no diodes are driven to emit light during the second portion of the display cycle when the diodes are sensing, then the calibration of Stam cannot occur. Thus, even if there is a suggestion to modify Stam with Scozzafava to drive the diodes as recited in claim 31, it renders Stam unfit for its intended purpose.

Accordingly, claim 30 and dependent claim 31 are allowable over the combination of Stam, Mueller, and Scozzafava.

The addition of Mueller does not cure the deficiencies of Stam, Cok, and Ogawa

Claims 37-39 are rejected as being unpatentable over Stam et al. and Mueller and further in view of Ogawa.

As described above, replacing Cok with Mueller in thc combination of Stam and Cok does not cure the deficiencies of the combination. In addition, as described above, Ogawa does not suggest detecting a position on the display device at which an external pointing device is incident on at least one of the diodes.

The combination of Stam, Mueller, and Ogawa does not teach or suggest each and every element of claims 37-39. Accordingly, claims 37-39 are allowable over the combination of Stam, Mueller, and Ogawa.

CONCLUSION

Applicant requests reconsideration in view of the foregoing remarks. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case. Applicant's representative can frequently be reached at (503) 880-3613 outside of normal office hours.

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Respectfully submitted,

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